INSTALLATION RESTORATION PROGRAM

LF-023 (GROUNDWATER SURFACE WATER AND SEDIMENT)

RECORD OF DECISION

PLATTSBURGH AIR FORCE BASE

PLATTSBURGH, NEW YORK

DRAFT

Prepared By:

URS Consultants, Inc.
282 Delaware Avenue
Buffalo, New York 14202

AUGUST 1993

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DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Plattsburgh Air Force Base (AFB),
Landfill-23 (Site LF-023)
Plattsburgh, New York

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents a selected remedial action for Operable Unit Two, consisting of groundwater, surface water, and sediment at Landfill LF-023 on Plattsburgh AFB in Plattsburgh, New York. This document was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record for this site, a copy of which is located at Plattsburgh AFB.

The remedy has been selected by the U.S. Air Force (USAF) and the U.S. Environmental Protection Agency (USEPA) with the concurrence of the New York State Department of Environmental Conservation (NYSDEC), pursuant to a Federal Facilities Agreement among the parties under Section 120 of CERCLA.

ASSESSMENT OF THE SITE

Releases of hazardous substances from this site present no imminent or substantial endangerment to public health, welfare, or the environment. Groundwater is not presently used as a residential water supply source downgradient of LF-023. However, groundwater has been degraded by site contaminants and, if not addressed by implementing the response action selected in this ROD, represents a potential risk to public health in the future.

DESCRIPTION OF THE REMEDY

This Operable Unit is the second and final Operable Unit for which action has been taken at this site. The first Operable Unit at this site is the contaminant source, which will be addressed by the installation of a multi-layer, low-permeability cap meeting the requirements of 6 NYCRR Part 360. Further degradation of groundwater will be effectively eliminated by the implementation of this source control remedy.

The second Operable Unit, consists of groundwater, surface water, and sediment contamination present as a result of LF-023. Since results of the Baseline Risk Assessment indicate that no unacceptable human health risk or population-level ecological risk is currently posed by surface water or sediments, no remedial action is required with respect to these media. The selected remedy for this Operable Unit therefore addresses groundwater only. This selected remedy is

Institutional Action. Human health and welfare will be protected through this remedy by preventing human exposure to contaminated groundwater. In addition, existing groundwater contamination will be reduced by natural processes of attenuation.

The major components of the selected remedy are:

- Deed restrictions prohibiting withdrawal of groundwater for residential use in this area;
- All elements of the source control remedy provided by Operable Unit One;
- Installation of additional monitoring wells;
- Long-term environmental monitoring of groundwater and surface water;
- Development of action criteria; and
- Site reviews at five-year intervals to evaluate the effectiveness of the remedy.

Groundwater contamination has the potential to affect two different off base receptors; therefore, two sets of action criteria will be established. One set of action criteria will be established to be protective of a sidegradient, offbase residential community. Action will be triggered if monitoring wells along the base boundary in this vicinity indicate contaminant concentrations in groundwater in contravention of groundwater ARARs. A second set of action criteria will be developed for protection of downgradient surface water resources. If action criteria are exceeded during monitoring, or if the five year review indicates that the selected remedy is not effective, then a focused Feasibility Study will be performed. This study will include re-evaluation of technologies screened in the Feasibility Study for Operable Unit Two and an evaluation of other feasible groundwater remediation technologies that may have been developed in the interim. Upon completion of the study, an appropriate course of action will be recommended.

DECLARATION

The selected remedy is protective of human health and the environment, complies with federal and state action- and location-specific requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. Deferments to federal and state chemical-specific requirements have been granted by USEPA and NYSDEC.

This remedy employs permanent solutions to the maximum extent practicable. Because mitigation of this site's principal threats by treatment does not offer a significant advantage in the pace of remediation compared to the selected remedy, and because these threats are not imminent, a treatment option has not been included as a primary element of the remedy. This remedy therefore does not satisfy the statutory preference for treatment as a principal element of the remedy. Treatment options may, however, be considered following a review of the progress of remediation.

Because this remedy will result in hazardous substances remaining on site at levels above health-based criteria, a review will be conducted five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health.

WILLIAM J. MUSZYNSKI P.E. — Date
Acting Regional Administrator, USEPA Region II

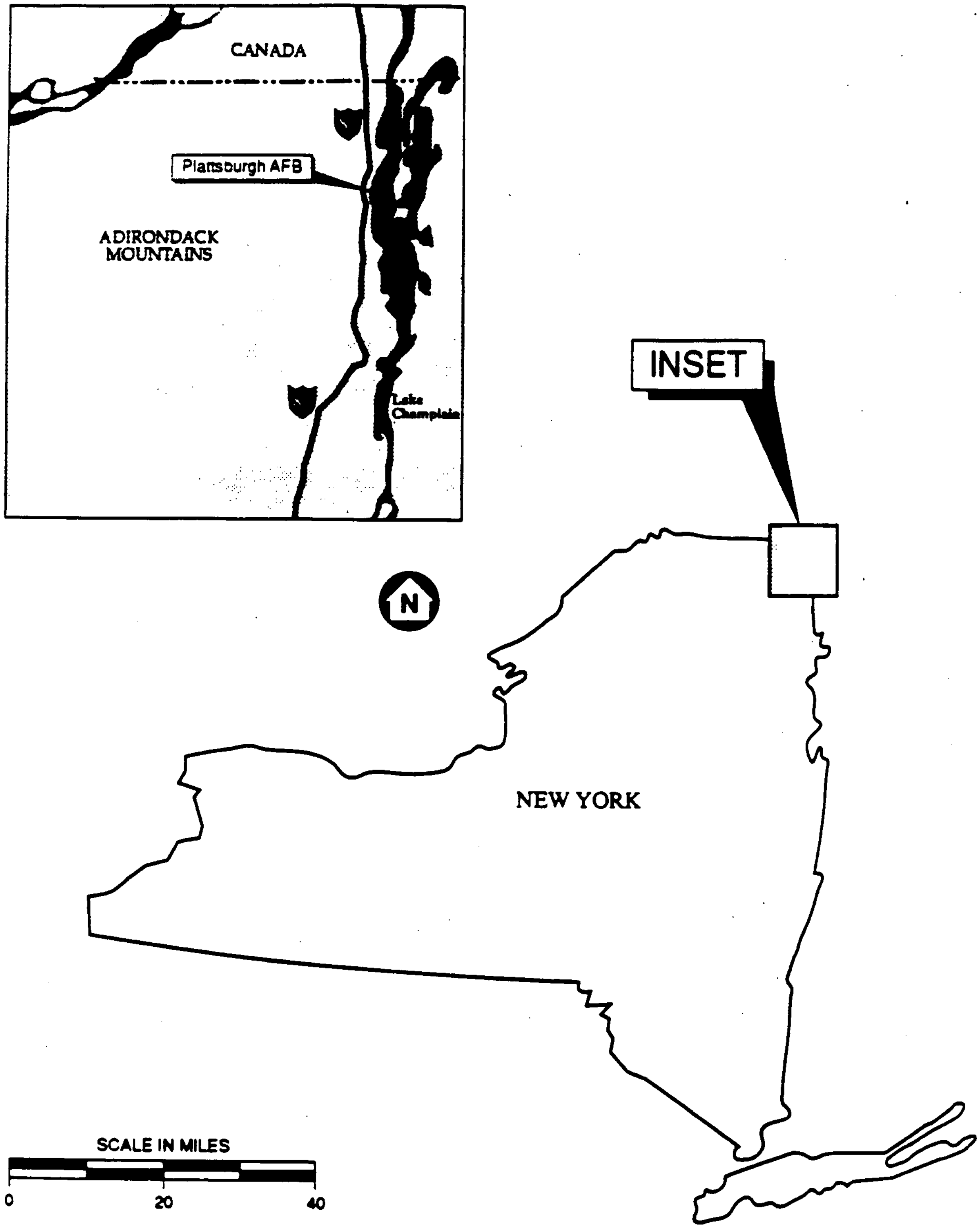
GARY D. VEST — Date
Deputy Assistant Secretary of the Air Force
(Environment, Safety, and Occupational Health)

1.0 SITE NAME, LOCATION, AND DESCRIPTION

Plattsburgh AFB is located in Clinton County in northeastern New York State. The base is currently slated for closure by the Congress of the United States. It is bordered on the north by the City of Plattsburgh and on the east by Lake Champlain (Figure 1-1). It lies approximately 26 miles south of the Canadian border and 167 miles north of Albany. Landfill LF-023 is situated west of the base runway and south of the FT-002 site and LF-022 (Figure 1-2).

The main portion of the landfilled area is approximately 500 feet wide by 800 feet long, with its western edge approximately 300 feet from the Plattsburgh AFB western boundary. The site slopes toward the east and south, with a surface gradient of approximately 0.026. LF-023, the last active municipal landfill at Plattsburgh AFB, reportedly received domestic wastes for disposal. Since the operations at LF-023 ceased, secondary plant growth has begun to cover the site and an exercise training course had been constructed on the site. In the summer of 1993, the exercise course was removed and installation of an impermeable cap initiated as part of Operable Unit One. Soil within the landfill boundaries consists of poorly graded fine to medium sand with trace silt. The soil appears to be native soil mined in the area and used as cover material after landfill operations ceased.

A more complete description of LF-023 may be found in the LF-023/LF-022 Remedial Investigation Report, Section 1.3 - Site Background and Section 4.1 - Physical Characteristics.

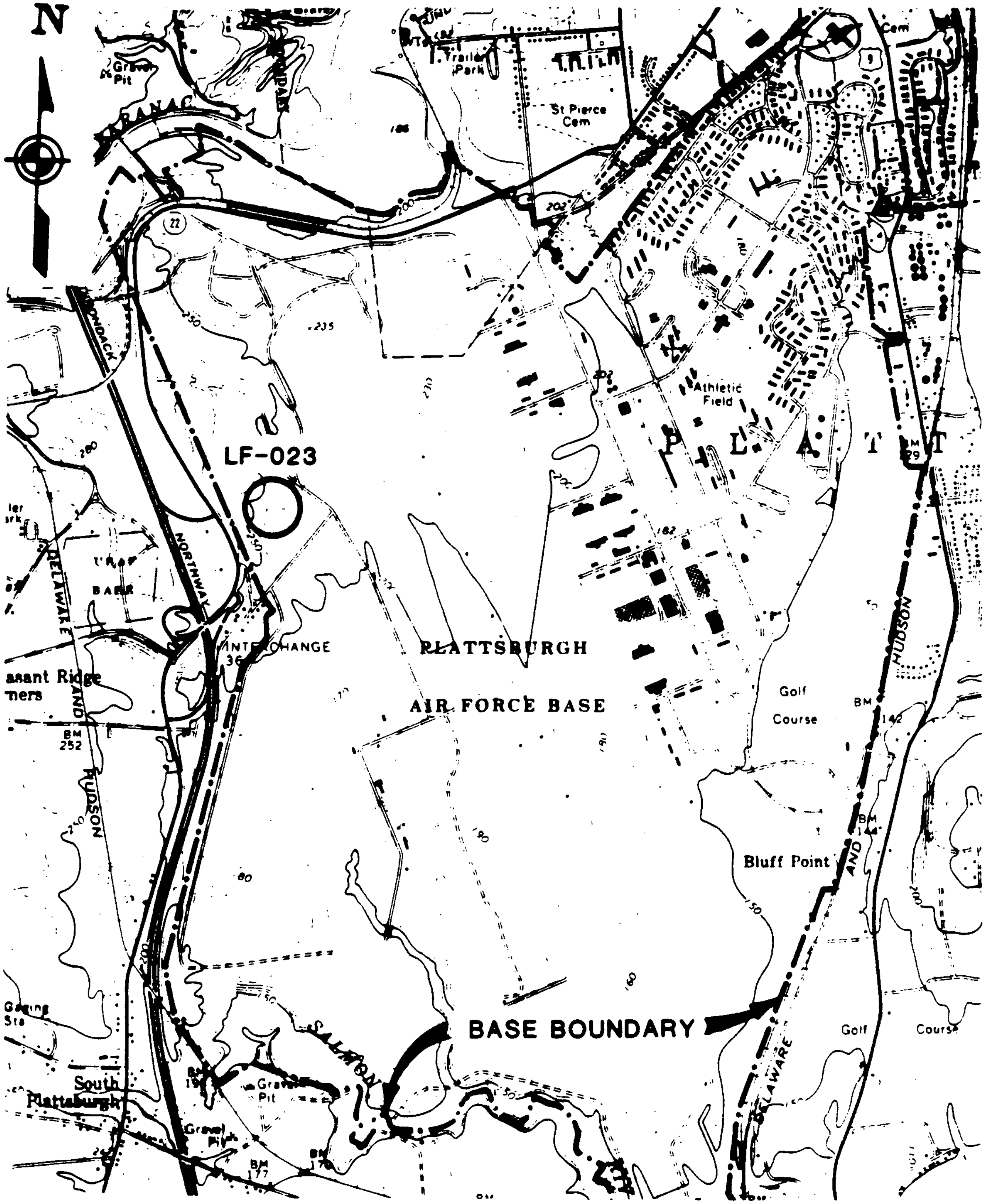


SOURCES
1) NORTH AMERICAN ROAD ATLAS, H.M. GOUSHA CO.; 1982
2) E.C. JORDAN CO.; REMEDIAL INVESTIGATION REPORT

FIGURE 1-1

VICINITY LOCATION MAP

A-4674



MAP SOURCE

USGS 7.5 MINUTE SERIES QUADRANGLE
PLATTSBURGH, N.Y. - VT. (1966)

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PLATTSBURGH AIR FORCE BASE
SITE LOCATION MAP

FIGURE 1-2

A-4751

2.0 SITE HISTORY

In accordance with Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Plattsburgh AFB is publishing this Record of Decision (ROD) to address the comments of the public on the selected alternative. Plattsburgh AFB, in conjunction with USEPA and NYSDEC, has considered public comments in selecting the remedy for LF-023. This ROD summarizes the results and conclusions of the Remedial Investigation (RI), Risk Assessment (RA), Feasibility Study (FS), and Proposed Plan and addresses any public comments.

2.1 Land Use and Response History

Landfill LF-023 was the last active municipal landfill at Plattsburgh AFB, reportedly operating from 1966 to 1981. Operations reportedly consisted of digging 25-foot-deep trenches, spreading and compacting the trash, and covering it daily with 6-inch layers of sandy soil. Hazardous and organic wastes were not routinely disposed of in this landfill. There are indications in the record, however, that the landfill contains hazardous materials. Since operations at the landfill ceased, vegetation has begun to cover the site, and an exercise course had been constructed in its northern section. In the summer of 1993, the exercise course was removed and installation of an impermeable cap was initiated as part of site remediation.

A Preliminary Assessment (PA), consisting primarily of a records search, was conducted at LF-023 in 1985. Among the 13 sites rated during the PA, LF-023 ranked sixth.

Based on the results of the PA, a Site Inspection (SI) was conducted. This included a ground-penetrating radar survey, a magnetometer survey, excavation of test pits, and installation of three water table monitoring wells. The magnetometer survey was conducted to establish the landfill boundaries and to detect subsurface anomalies. Test pit locations were established on the basis of these findings. Monitoring wells were installed to observe groundwater gradients and to provide samples to evaluate groundwater quality. A supplemental SI was also conducted at LF-023. This included the installation of seven additional monitoring wells and sampling of private wells along the western boundary of the base. Data from the SI indicated the presence of vinyl chloride and aromatic organic chemicals in groundwater east and southeast of the landfill. Dichlorobenzene was detected in samples of waste and soil collected from test pits. No site contaminants were detected in groundwater from the private wells.

Because SI results indicated the presence of contaminants, an RI was conducted at LF-023 in the fall of 1988, with supplemental RI sampling conducted during the fall of 1989. RI activities included a topographic survey, geophysical surveys, and sampling of groundwater, surface soil, sediment, and surface water. Contaminants were detected in all media sampled. In the fall of 1991, to further define the extent of contamination attributable to LF-023, additional downgradient groundwater, surface water, and sediment samples were collected.

In the fall of 1992, a supplemental investigation was conducted to fill in the remaining data gaps. The supplemental data confirmed the presence of an off-base source for fuel-related organics detected at MW-23-008 during the RI.

In 1992, a Feasibility Study (FS) was conducted in order to select a remedy to control the source of contamination (Operable Unit One) at LF-023. The selected remedy includes the installation of a multilayer, low-permeability cap meeting the requirements of 6 NYCRR Part 360. This remedy will effectively eliminate further contamination of groundwater resources, will prevent human contact with waste materials, and will remove the waste from contact with environmental receptors. A Record of Decision was executed on ________________ to implement the remedy, for which construction has begun in the Summer of 1993.

A second Feasibility Study was conducted in 1993, to address contamination (attributable to LF-023) currently present in groundwater, surface water, and sediments (Operable Unit Two). Several remedial alternatives were developed and screened, and a preferred alternative selected by Plattsburgh AFB, in consultation with USEPA and NYSDEC. This second Operable Unit is the subject of this Record of Decision.

2.2 Federal Facilities Agreement History

Activities at LF-023 have been conducted as part of the Defense Environmental Restoration Program (DERP), which was established to clean up hazardous waste disposal and spill sites at Department of Defense facilities nationwide. The Installation Restoration Program (IRP) is the U.S. Air Force subcomponent of the DERP. The IRP operates under the scope of CERCLA, as amended by the 1986 Superfund Amendments and Reauthorization Act.

The IRP at Plattsburgh AFB has included (1) a Preliminary Assessment to evaluate which sites are potentially contaminated, (2) SIs to confirm the presence or absence of contamination at identified sites, and (3) an ongoing RI program at sites confirmed to have contamination. On November 21, 1989, Plattsburgh AFB was included on the National Priorities List (NPL) of hazardous waste sites. It will be remediated according to the Federal Facilities Agreement entered into among the U.S. Air Force, USEPA, and NYSDEC on July 10, 1991.

3.0 COMMUNITY PARTICIPATION

Plattsburgh AFB has kept the community and other interested parties apprised of activities at LF-023 through informational meetings, fact sheets, press releases, and public meetings. On August 1, 1989, Plattsburgh AFB held its first Technical Review Committee (TRC) meeting to involve residents of Clinton County and state and federal regulatory agencies in decisions concerning IRP environmental response activities. The TRC currently meets quarterly to discuss plans and results of the RI/FS activities. In December 1990, Plattsburgh AFB released a community relations plan outlining a program to address community concerns and to keep citizens informed about and involved in activities during remedial activities.

The Plattsburgh AFB LF-023 Administrative Record has been available for public review at Plattsburgh AFB in Plattsburgh, New York, since October 20, 1990, and developments related to it have been advertised several times during the RI/FS process. Plattsburgh AFB published a notice and brief analysis of the Proposed Plan in the Press-Republican on ____________________, 1993 and made the Proposed Plan available to the public at the Plattsburgh public library on the same date.

On __________________, 1993, Plattsburgh AFB held a public informational meeting to discuss the results of the FS and the preferred alternative, to present the Proposed Plan, and to answer questions from the public. On __________________________, 1993, Plattsburgh AFB opened a 30-day public comment period to accept public comment on the alternative presented in the Proposed Plan and on any other documents previously released to the public. The written comments received during the public comment period and Plattsburgh AFB's response to comments are included in the attached Responsiveness Summary (See Section 14.0 of this document).

4.0 SCOPE AND ROLE OF OPERABLE UNIT

As mentioned in Section 2.1, the work elements of remedial action at LF-023 have been divided into two manageable components called "Operable Units (OUs)". These are as follows:

- OU One: Contaminant Source
- OU Two: Contaminated Groundwater, Surface water, and Sediments

In conjunction with USEPA and NYSDEC, and with public input, Plattsburgh AFB has already selected a remedy for OU One. This was done to meet the following remedial action objectives:

- minimize potential future human health and current and future ecological risks associated with exposure to chemicals in surface soil.

- minimize potential human health risks associated with exposure to groundwater by a hypothetical resident living downgradient of LF-023 sometime in the future.

- minimize potential human health risks associated with exposure to fugitive dust emissions by a hypothetical resident living in the vicinity of LF-023.

- minimize infiltration of precipitation to waste materials.

- minimize the potential for contaminant migration from waste material.

- minimize erosion of cover soil.

These objectives will be met by the selected remedy, which includes a multilayer, low-permeability cap meeting the requirements of 6 NYCRR Part 360. The remedy for OU One is currently in the construction stage. Actual construction of the cap was initiated in the Summer of 1993.

This Record of Decision addresses OU Two, for which the following remedial action objectives (specific to the groundwater medium) have been established:

- Prevent ingestion of water having carcinogens in excess of groundwater Applicable or Relevant and Appropriate Requirements (ARARs) and a total cancer risk of greater than $1x10^{-4}$.

- Prevent ingestion of water having noncarcinogens in excess of groundwater ARARs or having a total Hazard Index greater than one.

Control of the source of contamination has been provided under the remedy for OU One. With the implementation of this remedy, continued degradation of groundwater will be prevented, and natural attenuation will occur. The remedial plan for OU Two focuses on the contamination that has already impacted groundwater as a result of LF-023. No remedial action objectives were developed for cleanup of surface water and sediments in OU Two because, based upon calculations performed using data collected in the RI and supplemental investigations, these media appear to pose no unacceptable risk to human receptors or the environment.

5.0 SUMMARY OF SITE CHARACTERISTICS

As described previously, from 1987 to 1992 several investigations were undertaken at LF-023, including a two-phased Site Inspection (SI), a two-phased Remedial Investigation (RI), and a Supplemental Investigation. Collectively, the objectives of these studies were to: (1) determine the nature and extent of contamination attributable to LF-023; (2) determine and describe potential migration pathways for contaminants; and (3) quantify risks posed to human health and the environment. During these investigations, the site was physically and chemically characterized in order to accomplish these objectives. The site conceptual model is given as Figure 5-1.

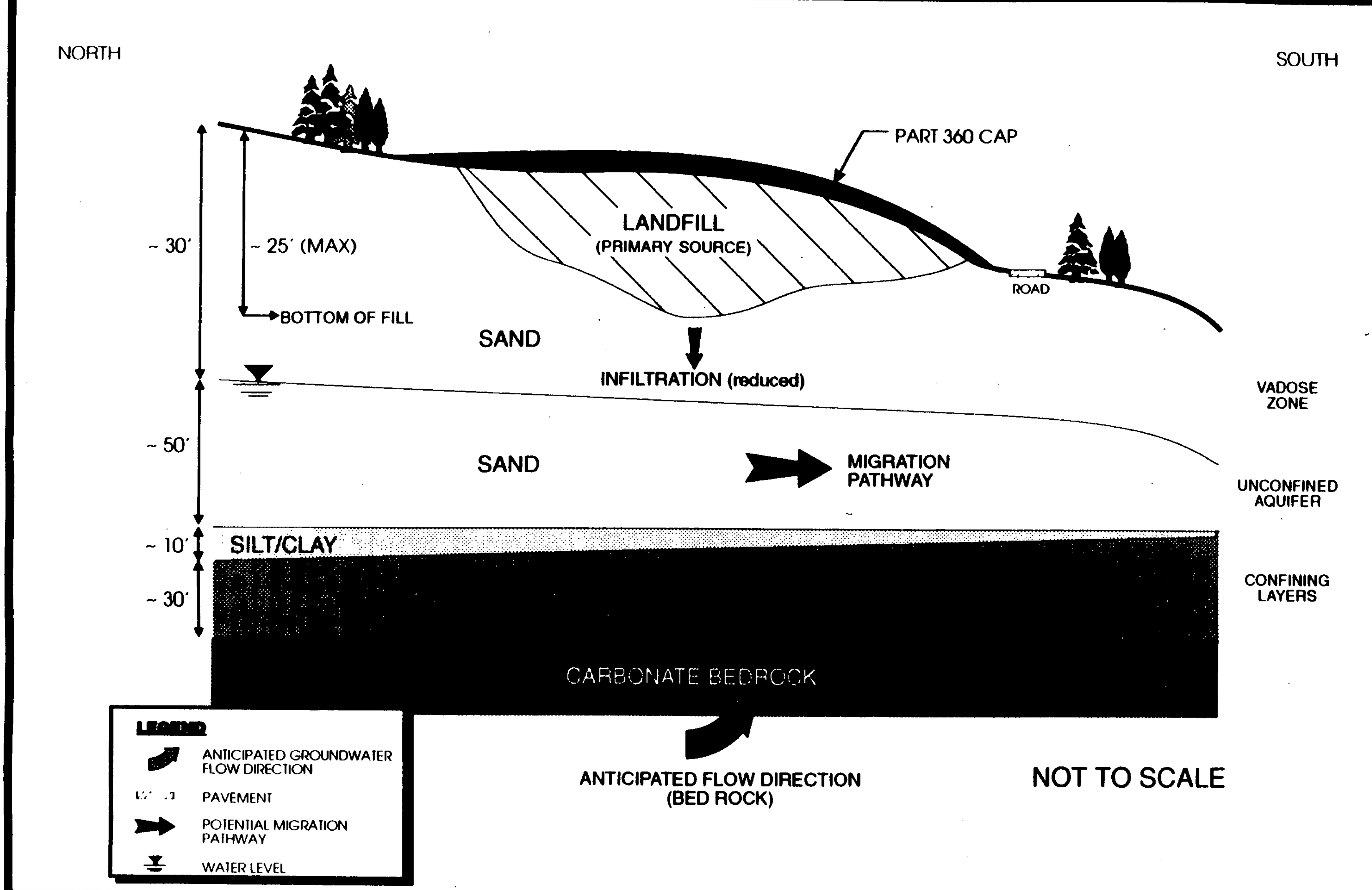
The areal extent of the main portion of the landfill was delineated by a magnetometer survey conducted during the SI. Two satellite sections of the landfill were defined by visual observation and by the results of a ground-penetrating radar survey. The areal extent of fill is indicated on Figure 5-2. Information from test pits within the landfill and from aerial photographs taken while the landfill was still active indicate that solid wastes were disposed of in trenches that varied in depth and length, and no consistent trenching pattern was observed. The maximum depth of the trenches observed during excavation of test pits was 13 feet. Information obtained from the Preliminary Assessment, however, indicated that wastes may have been buried as deep as 25 feet below ground surface (bgs) in some areas of the landfill. This information has been supported by interviews with Plattsburgh AFB employees. It is estimated that a few feet of undisturbed unsaturated sands separate the bottom of fill from the top of the water table. Plattsburgh AFB employees present at the time of landfill operation report that operational trenches were never deep enough to expose groundwater-saturated soil.

Four hydrogeologic units underlie the LF-023 area. These include, from the top down, an unsaturated zone, an unconfined sand aquifer, a silty-clay and till confining unit, and a confined bedrock aquifer. The groundwater table is located about 30 feet below ground surface and the saturated thickness ranges from 40 to 50 feet. Local groundwater flow is to the southeast, toward a system of wetlands and streams located approximately 1,500 feet south and southeast of the site. Vertical gradients in the vicinity of the site are consistently upward.

Surface soil, subsurface soil, groundwater, sediment, surface water, and waste samples were collected for chemical analysis to evaluate the nature and extent of contamination at the site. Contaminants detected in surface soils were predominantly polycyclic aromatic hydrocarbons (PAHs) (i.e. pyrene, fluorene), which are common landfill contaminants. One polychlorinated bi-phenyl (PCB), Aroclor 1254, and one metal (silver) were also detected.

Test pits were excavated during the SI to evaluate the nature of contamination in subsurface soil and buried waste. Material uncovered during test pitting indicates that the type of wastes disposed of at this site ranged from bagged household trash to construction debris and car parts. Metals were detected in all samples. No organic contaminants were identified in the subsurface soil. One waste sample obtained at the site contained 1,2-dichlorobenzene.

Four (4) surface water and 6 sediment samples have been taken downgradient (downstream) from LF-023 since 1988, each at a separate location. Four (4) of the 6 sediment sample locations were co-located with surface water sample locations. Ten (10) metals were



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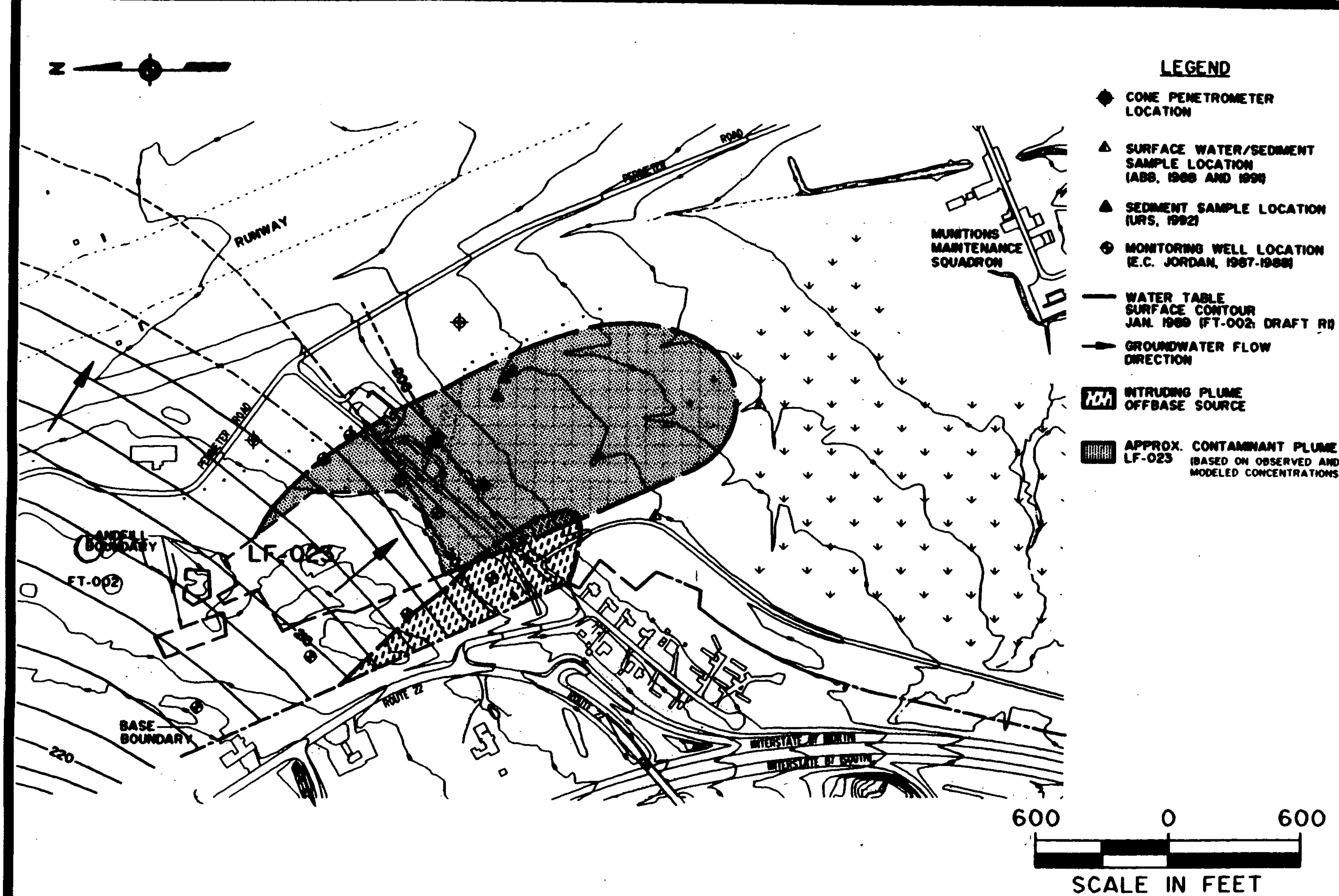
LF-023 POST CAP
CONCEPTUAL SITE MODEL

FIGURE 5-1

AC-5096

35291.04/ 1=600 7/30/93-2



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GROUNDWATER FLOW AND CONTAMINANT PLUMES

FIGURE 5-2

detected among the surface water samples. Three (3) of the metals (calcium, magnesium, and sodium) were detected at levels within the range of those same metals found in sidegradient groundwater samples. Five (5) metals (aluminum, arsenic, iron, manganese, and zinc) were detected in surface water at levels exceeding their range of concentrations in all groundwater samples. Two (2) metals (barium and lead), absent in all groundwater samples, were detected in the surface water samples. Organic compounds were not detected in any surface water samples. Nineteen (19) metals and one organic compound (xylenes) were detected in the sediment samples.

Thirty-five (35) Target Compound List (TCL) analytes, including 18 volatiles, 6 semivolatiles, and 11 metals, were detected among the four rounds of groundwater samples collected at LF-023. The greatest number and highest concentrations of analytes were consistently observed in groundwater from monitoring wells MW-23-003 and MW-23-011. These wells are located immediately downgradient from LF-023. The plume of groundwater contamination currently emanating from LF-023 appears to be proceeding predominantly southeastward, and, as indicated by the pattern of contamination observed in the well network, is limited to the unconfined aquifer. A second plume (of fuel-related chemical) appears to be entering the base near LF-023 from the west, as indicated by the results of the Supplemental Investigation. These two groundwater plumes are shown on Figure 5-2. Within the unconfined aquifer, contaminant concentrations tend to decrease with depth.

6.0 SUMMARY OF SITE RISKS

A baseline risk assessment (RA) was conducted as part of the RI to evaluate whether site contaminants pose an unacceptable risk to public health or the environment.

6.1 Contaminants of Concern

This Record of Decision addresses groundwater, surface water, and sediment impacted by LF-023. Contamination associated with surface soil and subsurface soils/waste material is being addressed under OU One (Source Control). All chemicals detected in groundwater that were considered site contaminants in the RI were selected as contaminants of potential concern for use in the risk assessment. All chemicals detected in surface water and sediment, regardless of source, were selected as contaminants of concern for these media. These analytes are listed by medium in Table 6-1. Only validated data were utilized in the calculations for the RA.

6.2 Exposure Scenarios

Exposure scenarios were developed for human exposure to groundwater, surface water, and sediment. Groundwater is not currently used as a drinking water source downgradient of the site. However, the following potential future groundwater exposure scenarios were developed and evaluated:

- Ingestion of Contaminated Groundwater by a Future Resident
- Direct Contact with Contaminated Groundwater by a Future Resident
- Inhalation of Volatile Compounds from Groundwater While Showering by a Future Resident

These pathways would be viable only if the base were closed and the site were developed for residential use, with groundwater obtained from the plume as the primary water supply source.

In the RI, two present-use and two future-use scenarios were evaluated for exposure to surface water. These included:

- Ingestion of Contaminated Surface Water by a Child Trespasser
- Direct Contact with Contaminated Surface Water by a Child Trespasser
- Ingestion of Contaminated Surface Water by a Future Child Resident
- Direct Contact with Contaminated Surface Water by a Future Child Resident

Potential risks from surface water and sediment were reevaluated following the additional sampling and analysis conducted during the Supplemental Investigation. At that time, risks posed by surface water were recalculated and the following sediment exposure pathways were added:

- Ingestion of Contaminated Sediments by a Child Trespasser
- Direct Contract with Contaminated Sediments by a Child Trespasser
- Ingestion of Contaminated Sediments by a Future Child Resident
- Direct Contact with Contaminated Sediment by a Future Child Resident

TABLE 6-1
CONTAMINANTS OF CONCERN
UTILIZED IN HEALTH RISK ASSESSMENT
LF-023 (GROUNDWATER, SURFACE WATER, & SEDIMENT)

GROUNDWATER		SURFACE WATER		SEDIMENT	
ANALYTE	MAXIMUM CONC. (ppb)	ANALYTE	MAXIMUM CONC. (ppb)	ANALYTE	MAXIMUM CONC. (ppm)
Chloroform	0.4	Aluminum	2180	Xylenes	0.072
Vinyl Chloride	31	Arsenic	376	Aluminum	7030
Chlorobenzene	10	Barium	502	Arsenic	55
Benzene	14	Calcium	62900	Barium	151
Ethylbenzene	54	Iron	165	Cadmium	27
Xylene	72	Lead	9.3	Calcium	45300
Naphthalene	11	Magnesium	21300	Chromium	38
2-Butanone	70	Manganese	187	Cobalt	58
Chloroethane	0.7	Sodium	21400	Copper	113000
1,1-Dichloroethane	1	Zinc	407	Iron	279000
1,2-Dichloroethane	1			Lead	1290
1,1-Dichloroethene	0.5			Magnesium	9260
Bis(2-ethyl hexyl)phthalate	14			Manganese	7730
Arsenic	24			Mercury	22
Nickel	46			Nickel	50
Chromium	80			Selenium	2.1
Zinc	200			Sodium	513
				Thallium	0.6
				Vanadium	52
				Zinc	100

ppb - parts per billion
ppm - parts per million

6.3 Risk to Human Populations

Based upon the results of the RA, and upon additional calculations performed subsequent to the Supplemental Investigation (which appear in the Groundwater FS; URS, 1993b), no unacceptable threat to public health appears to be posed by surface water or sediments in the vicinity of LF-023. However, a substantial potential threat to human health is present for future users of groundwater contaminated by LF-023.

No unacceptable carcinogenic or chronic risk based upon USEPA guidelines is evident given the present use of the site. However, analysis of risk given a future residential scenario yields hazard indices of 1.1 and 7.0 from ingestion for adult and child receptors, respectively. A hazard index over one is a potential cause for concern for chronic health effects. Cancer risks given the future-use scenario are 1×10^{-3} for both the adult and child receptor. This indicates that 1,000 additional persons out of one million are at risk of developing cancer if no further action is taken and the site is developed in the future for residential use that obtains drinking water from the plume. This risk exceeds the acceptable range (1×10^{-6} to 1×10^{-4}) established for remedial action by the National Contingency Plan (USEPA, 1990a). Potential carcinogenic and chronic risks in exceedance of recommended risk ranges and target values for LF-023 result entirely from ingestion of groundwater from the plume in the future-use scenario.

A summary of calculated carcinogenic and chronic risks for each exposure pathway is presented in Table 6-2.

6.4 Summary of Environmental Risks

An ecological exposure assessment, hazard identification, and risk assessment were undertaken to evaluate the potential for exposure of terrestrial organisms and aquatic invertebrates to chemicals from LF-023, and to quantify any adverse affects. Conclusions of the study are that surface waters have no adverse effects upon terrestrial organisms but may have both acute and chronic adverse effects upon aquatic invertebrates. Because these samples were collected in a relatively small area of the wetland, in the only area directly impacted by contaminants, it is assumed that population effects over the wetland as a whole are minimal.

6.5 Remediation Goals

In accordance with the NCP and USEPA guidance, remediation goals (cleanup levels) for groundwater at LF-023 were developed primarily from New York State and federal standards, criteria, and guidance for groundwater, and from the results of the human health risk assessment. These goals were developed for individual carcinogenic and non-carcinogenic contaminants. The remediation goals serve as a benchmark for determination of the adequacy of technologies in achieving overall protection of human health and for comparison of the permanence of various potential remedies. Cleanup of the groundwater to meet remediation goals will eliminate unacceptable chronic risk associated with the ingestion of groundwater and will reduce excess lifetime cancer risk to within the acceptable range (1×10^{-6} to 1×10^{-4}). Remediation goals are listed in Table 6-3.

TABLE 6-2
SUMMARY OF HUMAN HEALTH RISKS

PATHWAY-SPECIFIC RISK

SCENARIO	PATHWAY	RECEPTOR	CANCER RISK	HAZARD QUOTIENT
PRESENT USE	Ingestion of Surface Water	Child Trespasser	$2x10^{-6}$	0.01
	Direct Contact with Surface Water	Child Trespasser	$4x10^{-8}$	0.0002
	Ingestion of Sediment	Child Trespasser	$5x10^{-7}$	0.1
	Direct Contract with Sediment	Child Trespasser	NV	0.002
FUTURE USE	Ingestion of Groundwater	Adult Resident	$1x10^{-3}$	0.02
	Direct Contact with Groundwater	Adult Resident	$2x10^{-6}$	1.0
	Inhalation of Volatiles While Showering	Adult Resident	$4x10^{-5}$	0.06
	Ingestion of Groundwater	Child Resident	$1x10^{-3}$	6.0
	Direct Contact With Groundwater	Child Resident	$7x10^{-7}$	0.03
	Inhalation of Volatiles While Showering	Child Resident	$5x10^{-5}$	0.3
	Ingestion of Surface Water	Child Resident	$9x10^{-6}$	0.05
	Direct Contact with Surface Water	Child Resident	$2x10^{-7}$	0.001
	Ingestion of Sediment	Child Resident	$3x10^{-6}$	0.6
	Direct Contact with Sediment	Child Resident	NV	0.009

NV = No value calculated since USEPA-approved dermal absorption factors were unavailable for contaminants of concern.

TOTAL RISK BY RECEPTOR/MEDIA

RECEPTOR	CANCER RISK			HAZARD QUOTIENT		
	Surface Water/Sediment	Groundwater	Total	Surface Water/Sediment	Groundwater	Total
Child Trespasser (present)	$2x10^{-6}$	—	$2x10^{-6}$	0.1	—	0.1
Adult Resident (future)	—	$1x10^{-3}$	$1x10^{-3}$	—	1.1	1.1
Child Resident (future)	$1x10^{-5}$	$1x10^{-3}$	$1x10^{-3}$	0.7	6.3	7.0

TABLE 6-3
REMEDIATION GOALS

Compound	Goal (mg/L)	Basis
Vinyl Chloride	0.002	A
Benzene	0.0007	B
1,1-Dichlorethene	0.005	C
Chlorobenzene	0.005	A
Ethylbenzene	0.005	A
Xylene	0.005	A
MethylEthylKetone	0.05	D
Naphthalene	0.01	A
Bis(2-ethyl hexyl)phthalate	0.006	F
Arsenic	ND	E
Nickel	ND	E
Chromium	ND	E

A - New York State DEC Water Quality Standards and guidance Values, TOGS 1.1.1, November, 1991
B - 6NYCRR Part 703.5, September 1, 1991
C - Chapter I, New York State Sanitary Code, Subpart 5-1, Principle Organic Contaminant
D - Chapter I, New York State Sanitary Code, Subpart 5-1, Unspecified Organic Contaminant
E - Health Risk Assessment
F - Federal MCL
ND - Non-detect

7.0 DESCRIPTION OF ALTERNATIVES

The alternatives analyzed for OU Two are presented below. These are numbered to correspond with the numbers in the Feasibility Study (FS) Report. The alternatives are:

- Alternative 1: No Action
- Alternative 2: Institutional Action
- Alternative 3: Slurry Wall
- Alternative 4: Downgradient Extraction Wells, Full Treatment, and Discharge to Surface Water
- Alternative 5: Downgradient Extraction Wells, In-situ Treatment, Reinjection
- Alternative 6: Downgradient Extraction Wells, Full Treatment, Reinjection

These alternative have a number of elements in common. Each includes a cap, to be provided by the implementation of OU One, which will reduce infiltration and contaminant migration to groundwater. Each alternative also includes groundwater monitoring to assess the long-term impact of the landfill on groundwater quality under capped conditions. All alternatives with the exception of Alternative 1 incorporate institutional action to prevent residential usage of contaminated groundwater. Alternatives that incorporate groundwater treatment (Alternatives 3 through 6) include treatment processes that address the full range of contaminants exceeding health-based goals in groundwater. [Alternative 2 prevents exposure to groundwater by restricting its use.]

A description of all alternatives follows:

Alternative 1:
NO ACTION

Capital Cost: $0
Annual O&M Costs: $0
Present Worth: $0
Months to Implement: 0

Alternative 1 is representative of capped conditions at the landfill, as described in the ROD for OU One. No groundwater remediation or any other action is proposed as part of the No Action alternative. Natural attenuation of landfill contaminants is expected to occur in the absence of remedial measures. The Superfund program requires that the No Action alternative be evaluated at every site to establish a baseline for comparison.

Alternative 2:
INSTITUTIONAL ACTION

Capital Cost: $10,000
Annual O&M Cost: $64,000
Present Worth: $984,000
Months to Implement: 3

The purpose of Alternative 2 is to implement actions that will eliminate human exposure and health risk by restricting public access to groundwater rather than by cleaning up or containing contamination. Alternative 2 includes deed restrictions prohibiting the withdrawal of groundwater for residential use both on site and downgradient of the landfill within the extent of the contaminant plume. Contaminant levels are expected to be reduced over time by the processes of natural attenuation.

Alternative 3:
SLURRY WALL

Capital Cost: $7,779,000
Annual O&M Cost: $438,000
Present Worth: $11,914,055
Months to Implement: 24

Alternative 3 includes onsite extraction of groundwater within a slurry wall which fully encloses the site, full treatment of extracted water, and discharge of treated groundwater to nearby surface water. The purpose of extracting groundwater will be to control the water level within the area enclosed by the slurry wall, and to minimize leakage through the wall. [The steady-state pumping rate is estimated to be approximately 15 gpm]. The slurry wall would extend to a depth of approximately 80 to 100 feet to key into the confining unit beneath the site. It would encompass the entire landfill, having an estimated length of 3,200 feet. Full treatment of the extracted groundwater is expected to consist of air stripping, carbon adsorption and metals precipitation. Treated groundwater, which would meet surface water discharge criteria, would be discharged to the nearest storm sewer, 2,400 feet away, by gravity flow. The storm sewer empties into a tributary of the Salmon River, located south of the landfill.

Alternative 4:
DOWNGRADIENT EXTRACTION WELLS, FULL TREATMENT, AND DISCHARGE TO SURFACE WATER

Capital Cost: $2,211,500
Annual O&M Cost: $813,200
Present Worth: $8,879,876
Months to Implement: 12

Alternative 4 includes downgradient extraction of groundwater, full onsite treatment of the water, and discharge of the treated water to surface water. It is anticipated that the steady-state withdrawal rate would be 60 gpm. This groundwater extraction rate is sufficient to prevent offsite migration of contaminants, and to capture the plume downgradient of the site. Full treatment of the extracted groundwater is expected to consist of air stripping, carbon adsorption, and metals precipitation. Treated water, which would meet surface water discharge criteria, would be discharged to the nearest storm sewer, 2,400 feet away, by gravity flow. The storm sewer empties into a tributary of the Salmon River, located south of the landfill.

Alternative 5:
DOWNGRADIENT EXTRACTION WELLS, IN-SITU TREATMENT, AND REINJECTION

Capital Cost: $2,488,900
Annual O&M Cost: $772,500
Present Worth: $9,773,575
Months to Implement: 12

Alternative 5 includes downgradient extraction of groundwater, in-situ treatment (bioremediation), aboveground treatment, and reinjection of treated water upgradient of the landfill. It is anticipated that the steady-state withdrawal rate would be 60 gpm. This extraction rate is sufficient to prevent offsite migration of contaminants, and to capture the plume downgradient of the site. It is estimated that approximately 2 gpm of treated water (the amount that infiltrates through the cap) would have to be discharged to surface water in order not to create a pressure mound upgradient of the landfill. The 2 gpm of treated water, expected to meet surface water discharge criteria, would be discharged to the nearest storm sewer, 2,400 feet away, by gravity flow. The storm sewer empties into a tributary of the Salmon River, located south of the landfill. In-situ treatment (bioremediation) would be effective in removing organic contaminants. Aboveground treatment would, however, be required for metals removal. Treatment for both organics and metals is required to meet groundwater discharge criteria. Treated water would be reinjected upgradient of the landfill beyond the limits of the cap. Reinjection would occur through a series of recharge wells.

Alternative 6:
DOWNGRADIENT EXTRACTION WELLS, FULL TREATMENT, REINJECTION

Capital Cost: $2,333,900
Annual O&M Costs: $824,000
Present Worth: $10,106,106
Months to Implement: 12

Alternative 6 includes downgradient extraction of groundwater, full aboveground treatment of the water, and reinjection of the treated water upgradient of the landfill. It is anticipated that the steady-state withdrawal rate would be 60 gpm. This extraction rate is sufficient to prevent offsite migration of contaminants, and to capture the plume downgradient of the site. Full treatment of the extracted groundwater is expected to consist of air stripping, carbon adsorption, and metals precipitation. Reinjection of the treated water would occur upgradient of the landfill, beyond the limits of the cap. Reinjection would occur through a series of recharge wells. Approximately 2 gpm of water would have to be discharged to surface water in order not to create a pressure mound upgradient of the landfill.

8.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The preferred alternative for the remediation of groundwater contamination at the LF-023 site is Alternative 2 - Institutional Action. Based upon current information, this alternative appears to meet best the nine criteria that USEPA uses to evaluate alternatives. This section profiles the performance of the preferred alternative in relation to the nine criteria, noting how it compares to the other alternatives under consideration.

8.1 Threshold Criteria

- **Overall Protection of Human Health and the Environment**

If Alternative 2 through 6, which prohibit groundwater withdrawal for potable use, were implemented, the potential risk to human health posed by contaminants at the site through groundwater ingestion would be eliminated. Alternatives 4 through 6 also reduce the risks to human health associated with onsite and downgradient groundwater to acceptable levels over the long term by treatment. The potential risks to human health from ingestion of groundwater downgradient of the landfill would be eliminated slowly, over an extended period by Alternatives 2 and 3, as natural attenuation processes gradually result in groundwater cleanup goals being met. Alternative 1 does not provide protection to human health or the environment beyond what source remediation will accomplish.

- **Compliance with Applicable or Relevant and Appropriate Requirements**

Site-specific ARAR concentrations are currently being exceeded in the upper aquifer at the site. Neither Alternatives 1, 2, nor 3 include provisions to meet these ARARs. Alternatives 4, 5, and 6 propose to remediate both onsite and downgradient groundwater to comply with ARARs.

Action-specific ARARs, which include discharge criteria (for surface water and/or groundwater injection) and treatment standards (for air quality) will be met under all alternatives. Alternatives 1 and 2 do not propose groundwater remediation, and therefore they meet the ARARs. Alternatives 3 through 6 include treatment of extracted groundwater, and discharge to either surface water or groundwater. The treatment processes proposed for all alternatives should meet the ARARs, although some uncertainty exists regarding Alternative 5, which includes bioremediation, since treatability tests have not been performed and the capacity of this technology to meet discharge criteria is uncertain.

Location-specific ARARs include those pertaining to remediation near the wetland area downgradient of the site. Alternatives 1, 2, and 3 propose no remediation that impacts the wetland. Alternatives 4, 5, and 6 propose locating extraction wells near the wetland. These extraction wells would have a negative impact on the wetland. Groundwater levels in this area would be lowered as groundwater was withdrawn, potentially destroying the viability of the wetland. The wetland, or some part of it, may have to be relocated if this alternative were implemented.

8.2 Primary Balancing Criteria

- **Long-Term Effectiveness and Permanence**

The long-term effectiveness and permanence of the alternatives is measurable in how well they meet the remedial action objectives (RAOs) developed for the site. The RAOs are as follows:

- Prevent ingestion of water having carcinogens in excess of ARARs and a total excess cancer risk of greater than $1x10^{-4}$.

- Prevent ingestion of water having non-carcinogens in excess of ARARs or a total hazard index greater than one.

Alternative 1 (No Action) does not meet the RAOs developed for the site. Alternative 2 - (Institutional Action) does meet the RAOs for the site, since the deed restrictions that are part of this alternative would prohibit groundwater withdrawal for use as a residential supply source. Neither of these alternatives is a permanent remedy, and a review five years after implementation would be needed to assess groundwater quality.

Based on current data, it appears that under Alternative 2, groundwater contaminants would be attenuated to meet cleanup goals in several hundred years. However, a better estimate of the period required could be made after the cap is installed and monitoring data are collected.

The remaining alternatives, which include treatment of contaminated groundwater, are effective and permanent remedies. Alternative 3, which includes treatment of only onsite groundwater, is less effective than Alternatives 4, 5, and 6 which include treatment of the entire contaminant plume.

The time required to reach cleanup goals under Alternative 3 would be similar to the time requirement under Alternatives 1 and 2, namely, several hundred years. The time required to achieve cleanup goals under Alternatives 4, 5, and 6 is estimated to be on the order of 100 years.

Operation of the wells and treatment facilities for Alternatives 3 through 6 would continue for a relatively long period. Bioremediation may shorten the required operation time of Alternative 5 compared to the other treatment alternatives. The actual impact cannot, however, be estimated without a treatability study.

- **Reduction of Toxicity, Mobility and Volume**

Alternatives 1 and 2 would not reduce the mobility or volume of contaminants present in the groundwater, except over an extended period, as concentrations become lower through natural processes of attenuation.

Alternative 3, which includes a slurry wall, would most effectively reduce the mobility of contaminants in groundwater from the site. Alternatives 4 through 6 effectively reduce the mobility of contaminants both on site and downgradient of the site by extraction of downgradient groundwater. The toxicity of contaminants in groundwater will be reduced to acceptable levels following treatment of both onsite and downgradient groundwater. Alternatives 4 through 6 would be more effective in reducing the volume of toxic groundwater, since the entire plume would be treated.

- **Short-term Effectiveness**

Since no construction is required to implement Alternatives 1 and 2, no associated short-term impacts would occur to the community, workers, or the environment. Short-term impacts for Alternatives 4, 5 and 6 are not expected to be significant. The alternative posing the greatest short-term impact is Alternative 3, which includes construction of a slurry wall and probable excavation of wastes. During the anticipated two-phased construction period, short-term impacts to workers, the community, and the environment would exist through many different pathways: surface water runoff, erosion of exposed wastes, fugitive dust, and vapors from exposed wastes. These impacts would have to be mitigated through extensive controls such as: appropriate health and safety measures for workers in contact with waste materials; precautions against fugitive dust generation and vapors; and the installation of temporary controls against runoff or erosion of contaminated soils. Once the exposed wastes are covered, however, the short-term impacts to the community, workers, and the environment posed by construction will no longer be present.

- **Implementability**

Alternatives 1 and 2 could be implemented with little difficulty. These alternatives would not impede the implementation of future groundwater remedial actions. Alternative 3 is expected to be the most difficult to implement since it includes construction of an extensive slurry wall around the landfill perimeter. The time required for construction of the slurry wall is expected to make implementation of this alternative a relatively long process compared to the other alternatives.

Construction of extraction wells proposed in the remaining alternatives is not expected to be difficult, although onsite wells in Alternative 3 may be located in filled areas, requiring special health and safety controls. Injection wells proposed upgradient of the site should similarly not be difficult to construct. Construction of the treatment facilities and gravity flow systems would be similar for all alternatives.

The technologies proposed for Alternatives 3, 4, and 6 are generally proven and reliable, with the exception of the injection wells proposed for Alternative 6. [This technology is also included in Alternative 5.] Injection wells suffer from operational problems, including air locks and the need for frequent maintenance and well rehabilitation. The reliability of the bioremediation proposed as part of Alternative 5 is uncertain, as this is not a proven method of treating groundwater contaminated by a landfill. Treatability testing is needed to more adequately assess the reliability of this technology. The availability of technical specialists needed to implement this technology is also somewhat limited.

- **Cost**

Costs are presented as capital costs, annual O&M costs, and the present-worth cost of each alternative.

Since no groundwater remedial actions are included in Alternative 1, no costs are associated with this alternative. Long term monitoring associated with Alternative 2 would result in a nominal capital cost. Alternative 3, which includes a slurry wall, has the highest capital cost. The capital costs of Alternatives 4, 5 and 6 are comparable.

The lowest annual O&M cost is associated with Alternative 2, which does not incorporate groundwater treatment. Alternative 3 has the second lowest annual O&M cost since the required groundwater treatment system has the smallest capacity. O&M costs for Alternatives 4, 5 and 6 are comparable. O&M costs have been estimated based on a 30-year treatment and monitoring program.

As discussed, the time required to reach cleanup goals by groundwater treatment (alternatives 4, 5, and 6) is 100 years. If O&M costs were assumed to occur for an additional 70 years at the estimated annual cost the present worth of these alternatives would increase by approximately $463,000, $440,000, $469,000 for alternatives 4, 5, 6 respectively. The time required to reach cleanup goals for alternatives 2 and 3 is several hundred years (estimated at 650 years). Assuming estimated annual O&M costs were incurred for an additional 620 years would increase the present worth cost of alternatives 2 and 3 by $37,000 and $250,000 respectively.

By this analysis, alternative 2 compares even more favorably to other alternatives in terms of cost. However, the present worth of O&M costs were calculated for a 30 year period for the purpose of comparing alternatives to comply with USEPA guidance and because projections of costs beyond 30 years are likely to be much less accurate.

The present-worth cost of all alternatives (based on 30 year operation period) involving treatment of groundwater (Alternatives 3 through 6) range from $9,773,575 to $11,914,055. In order of increasing cost they are as follows: Alternative 5 ($9,713,575), Alternative 4 ($9,879,976), Alternative 6 ($10,106,106) and Alternative 3 ($11,914,055). The present worth of Alternative 2 is $984,000.

8.3 Modifying Criteria

- **State Acceptance**

NYSDEC has reviewed all project documents including the RI, RA, FS and Proposed Plan, and concur with the selected remedy.

- **Community Acceptance**

Plattsburgh AFB has kept the community and other interested parties apprised of activities at LF-023 through informational meetings, fact sheets, press releases, and public meetings. On ____________________, 1993, Plattsburgh AFB opened a 30-day public comment period to accept public comment on the alternative presented in the Proposed Plan and on any other documents previously released to the public. The written comments received during the public comment period and Plattsburgh AFB's response to comments are included in the attached Responsiveness Summary (See Section 13.0 of this document).

9.0 THE SELECTED REMEDY

9.1 Description

Plattsburgh AFB and USEPA, with the concurrence of NYSDEC, have selected Alternative 2 - Institutional Action as the response action to be implemented for OU Two at LF-023. Human health will be protected by preventing human exposure to contaminated groundwater. This remedy satisfactorily addresses groundwater contamination at the site, since further degradation of groundwater resources will be prevented by landfill capping, and existing groundwater contamination will then be reduced by natural attenuation.

The primary preferred alternative (Alternative 2) includes the following elements:

1) Deed restrictions prohibiting withdrawal of groundwater for residential use in this area;
2) All elements of the source control remedy provided by Operable Unit One;
3) Installation of additional monitoring wells;
4) Environmental monitoring of groundwater and surface water; and
5) Development of Action Criteria;
6) Periodic (five-year intervals) site reviews to evaluate the effectiveness of the remedy.

Deferments to chemical-specific requirements have been granted by USEPA and NYSDEC. Therefore, the impact of the remediation of OU One (Source Control-Capping) can be observed over time without the need to comply with chemical-specific ARARs. After five years, the effectiveness of this remedy will be assessed by comparison of the monitoring data to remediation goals (Table 6-3).

9.2 Action Criteria and Focused Feasibility Studies

Groundwater has the potential to affect two different off base receptors; therefore, two sets of action criteria will be established. One set of action criteria has been established for the area sidegradient to LF-023. Contamination migrating toward the west from LF-023 has the potential to impact groundwater that is currently being used by an off base residential community for drinking water. Results from the proposed monitoring wells located sidegradient of LF-023 near the base boundary (see Figure 9-1) will be used to determine if contamination is migrating from the landfill toward these off base residents. Results from the sidegradient monitoring wells will be compared to groundwater ARARs. PAFB will be required to undertake further action if the results from two successive sampling events indicate that groundwater is migrating off base toward the residential community in excess of ARARs.

A second set of action criteria will be developed for downgradient receptors. Downgradient action criteria will be based on surface water sampling since the nearest downgradient off base receptor is the Salmon River. PAFB will be required to undertake further action if any of the organic compounds for which remediation goals have been established (Table 6-3) are detected at concentrations above the remedial goal in two successive sampling events. Metals will not be used to trigger action since metals are not likely to migrate significantly

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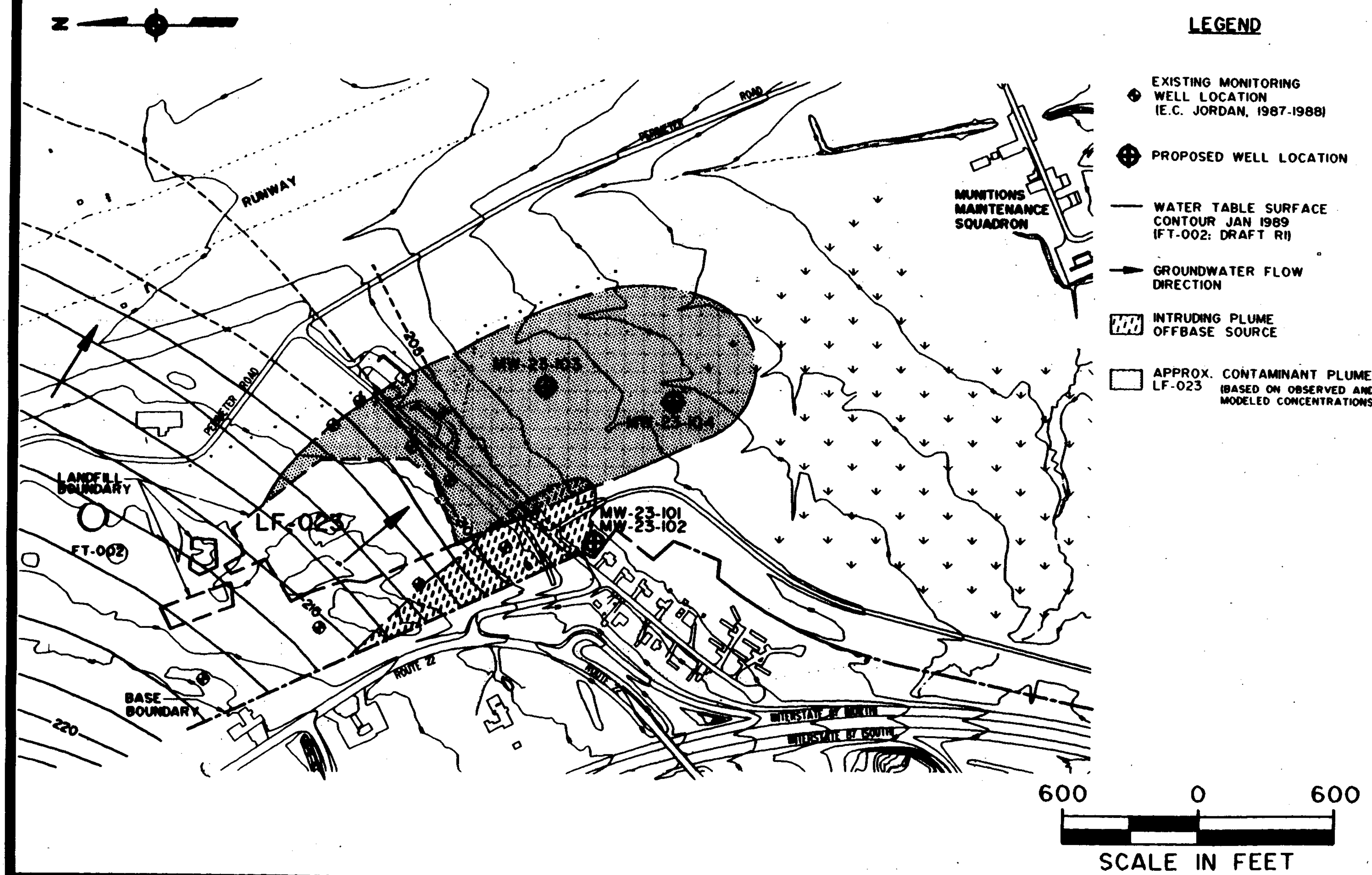

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PROPOSED ADDITIONAL MONITORING WELL LOCATIONS

FIGURE 9-1

beyond the LF-023 boundary and because metals are naturally occurring and are likely to be detected in surface water samples regardless of any impact from LF-023. Proposed surface water monitoring locations are depicted on Figure 9-2.

The effectiveness of Alternative 2 will be evaluated every five years using all data generated from the monitoring program. This evaluation will determine the effectiveness of Alternative 2 by comparing analytical results to cleanup goals. It is possible that progress toward cleanup goals will be unsatisfactory even though remedial action may not required based on the action criteria. If so, further action will be required.

In the event that either action criteria or the five year site evaluation indicate further action is required, a focused feasibility study will be prepared. Since action, if required, will occur in the future it is likely that groundwater conditions will have changed, i.e. groundwater concentrations and the number of analytes detected will decrease. It is also possible that regulatory requirements will change and that technical advances will occur during the interim period. There are a number of technologies (e.g. passive treatment walls) that are in the developmental stages that may be feasible at the time the study is initiated. Therefore, the focused feasibility study will re-evaluate the alternatives discussed in this FS with respect to future site conditions and regulatory requirements, and will include an evaluation of state-of-the art technologies.

There are two sets of action criteria, i.e. sidegradient and downgradient. A focused feasibility study will be required if either set of criteria indicate action is required. Since the threat to human health is more imminent if sidegradient groundwater is impacted, an immediate measure may be required to protect the drinking water supply of nearby residences while other remedial actions are being considered. Therefore, a focused feasibility study that addresses sidegradient contamination will be prepared in two phases. The first phase will consider immediate measures (For example, provision of potable water to affected residences) to protect human health. The second phase will consider additional remedial measures, if required. Recent investigations have indicated that groundwater sidegradient to the landfill is being contaminated by an off base source. Therefore, a focused feasibility study that addresses sidegradient contamination will include an assessment of the source of this contamination (in the second phase). This assessment will be used to determine PAFB's contribution to sidegradient contamination and consequently the appropriate basis for further action.

Since the threat to human health is not imminent downgradient of LF-023, immediate measures and the two phased focused feasibility study approach used for sidegradient contamination will not be required. A focused feasibility study that addresses downgradient contamination will also consider the source of contamination. Sources other than LF-023, that could impact the Salmon River include site SS-013 (Munitions Maintenance Facility) site downgradient of LF-023, FT-002 (Fire Training Area) or an off base source upstream of the base. Determination of the source of downgradient contamination will be based on a comparison of concentrations of contaminants in samples in the Salmon River near the base to concentrations in downgradient monitoring wells, surface water samples from on base drainage, and upstream samples in the Salmon River (Figure 6-2). The evaluation will be used to determine the landfill's contribution to the contamination detected, if any, and the appropriate action required.

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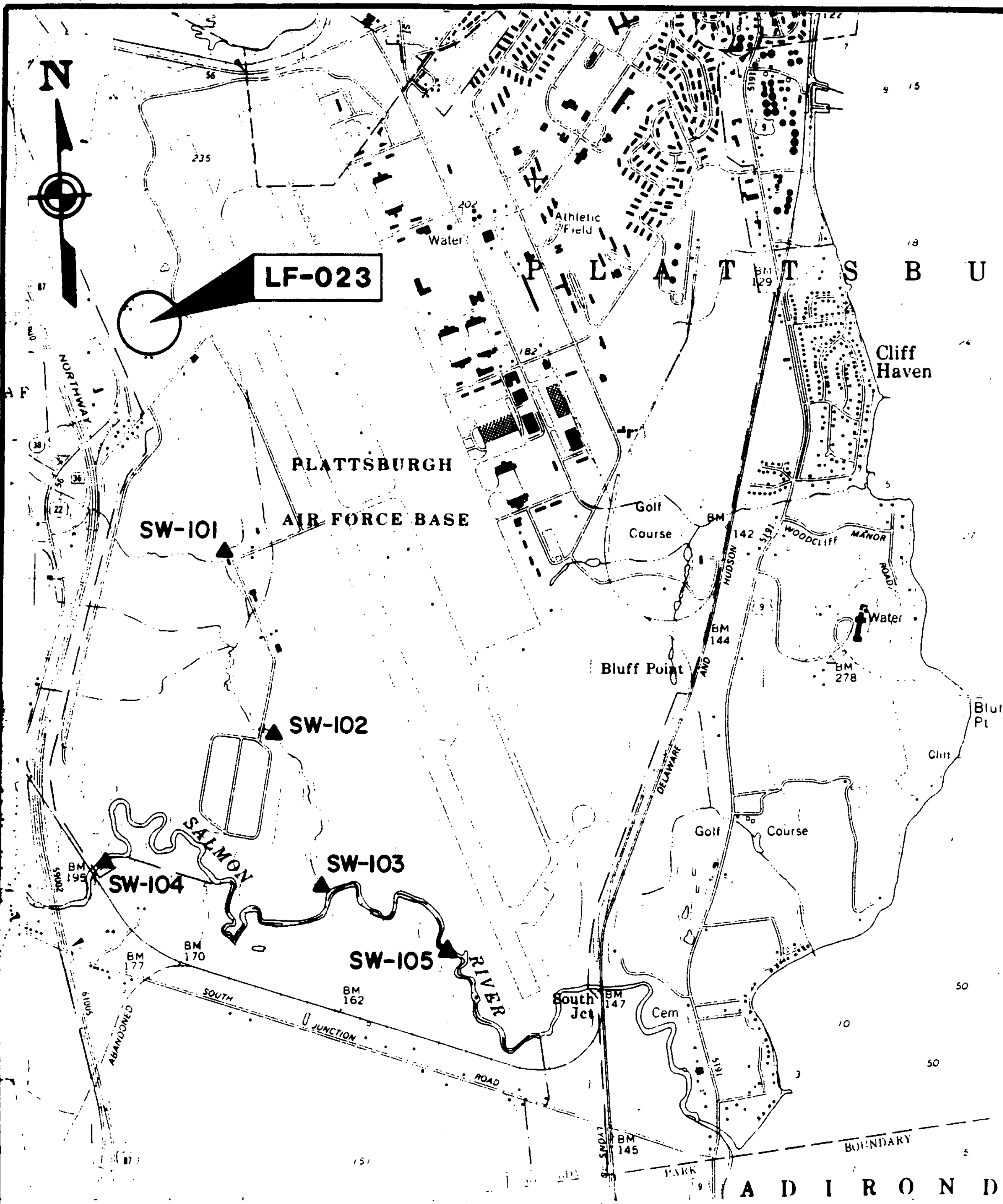

MAP SOURCE:
USGS 7.5 MINUTE SERIES QUADRANGLE - PLATTSBURGH, NY-VT (1966)

▲ PROPOSED SURFACE WATER MONITORING LOCATION

2000 FT 0 2000 FT
SCALE

A-5051

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PROPOSED SURFACE WATER MONITORING LOCATIONS

FIGURE 9-2

10.0 STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state action- and location-specific requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. Deferments to federal and state chemical-specific requirements have been granted by USEPA and NYSDEC.

This remedy employs permanent solutions to the maximum extent practicable. Because mitigation of this site's principal threats by treatment does not offer a significant advantage in the pace of remediation compared to the selected remedy, and because these threats are not imminent, a treatment option has not been included as a primary element of the remedy. This remedy therefore does not satisfy the statutory preference for treatment as a principal element of the remedy. Treatment options may, however, be considered following a review of the progress of remediation.

Because this remedy will result in hazardous substances remaining on site at levels above health-based criteria, a review will be conducted five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health.

11.0 DOCUMENTATION OF NO SIGNIFICANT CHANGES

The chosen remedial action for LF-023 (OU Two) is Alternative 2 - Institutional Action. This action does not differ from the preferred alternative presented in the Proposed Plan.

12.0 STATE ROLE

NYSDEC, on behalf of the State of New York, has reviewed the RI, RA, FS and the preferred alternative, both from the viewpoint of health and environmental risk, and from the viewpoint of compliance with ARARs. NYSDEC concurs with the selection of the preferred alternative. A copy of NYSDEC's declaration of concurrence may be found in Appendix A.

13.0 RESPONSIVENESS SUMMARY

(To be completed after the public informational meeting and public comment period).

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